REMARKS/ARGUMENTS

Claims 1-7 and 13-15 are pending in this application. By this Amendment, Applicant AMENDS claim 1 and the specification and CANCELS claims 8-12 and 16-19.

Applicant has amended paragraph [0013] of Applicant's specification to correctly list Patent Document No. 7 as PCT International Publication No. WO 00/03403.

On page 3 of the outstanding Office Action, the Examiner rejected claims 1-7 under 35 U.S.C. §112, second paragraph, for allegedly being indefinite. Applicant has amended claim 1 to correct the informalities noted by the Examiner. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 112, second paragraph.

On page 4 of the outstanding Office Action, the Examiner rejected claims 1-7 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over each of Kanekiyo et al. '235 (U.S. 2002/0117235) and Kanekiyo et al. '339 (U.S. 2002/0017339). On page 6 of the outstanding Office Action, the Examiner rejected claims 13-15 under 35 U.S.C. § 103(a) as being unpatentable over each of Kanekiyo et al. '235 and Kanekiyo et al. '339.

Applicant respectfully traverses the rejections of claims 1-7 and 13-15.

Applicant's Claim 1 recites:

> A nanocomposite magnet having a composition represented by the general formula: $R_xQ_yM_z(Fe_{1-m}T_m)_{bal}$, where R is at least one rare-earth element, Q is at least one element selected from the group consisting of B and C, M is at least one metal element that is selected from the group consisting of Al, Si, Ti, V, Cr, Mn, Cu, Zn, Ga, Zr, Nb, Mo, Ag, Hf, Ta, W, Pt, Au and Pb and that always includes Ti, T is at least one element selected from the group consisting of Co and Ni, and the mole fractions x, y, z and m satisfy the inequalities of
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> 6 at%$\leqq$x$<$10 at%,
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> 10 at%$\leqq$y$\leqq$17 at%,
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> 0.5 at%$\leqq$z$\leqq$6 at% and
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> 0$\leqq$m$\leqq$0.5, respectively,
>
> the nanocomposite magnet including a hard magnetic phase and a soft magnetic phase that are magnetically coupled together,
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> wherein the hard magnetic phase is made of an $R_2Fe_{14}B$-type compound,

wherein the soft magnetic phase includes an α-Fe phase and a crystalline phase as main phases, and

wherein **the crystalline phase has a Curie temperature of 610 °C to 700 °C**. (emphasis added)

Applicant's claim 6 recites a feature that is similar to the above emphasized feature recited in Applicant's Claim 1.

In Section No. 9 on pages 4 and 5 of the outstanding Office Action, the Examiner alleged that both of Kanekiyo et al. '235 and Kanekiyo et al. '339 teach or render obvious the features recited in Applicant's claims 1 and 6. More specifically, the Examiner alleged that the alloy compositions discussed in paragraphs [0013] and [0179]-[0186] of Kanekiyo et al. '235 and in paragraph [0014] of Kanekiyo et al. '339 correspond to the alloy compositions recited in Applicant's claims 1 and 6.

In the first full paragraph on page 5 of the outstanding Office Action, the Examiner admitted that Kanekiyo et al. '235 and Kanekiyo et al. '339 fail to teach or suggest a crystalline phase with "a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claims 1 and 6. In the second full paragraph on page 5 of the outstanding Office Action, the Examiner alleged that, because the compositions of the nanocomposite magnets and alloys of Kanekiyo et al. '235 and Kanekiyo et al. '339 allegedly overlap with the composition of the presently claimed nanocomposite magnets and alloys and are made by a similar method as discussed in the present specification, the nanocomposite magnets and alloys of Kanekiyo et al. '235 and Kanekiyo et al. '339 would be expected to have a crystalline phase with "a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6.

Applicant respectfully disagrees.

The present inventors, some of whom are inventors of Kanekiyo et al. '235 and Kanekiyo et al. '339, have optimized the melt-quenching process used to form nanocomposite magnets and alloys, which has resulted in the claimed nanocomposite magnets and alloys that have the feature of "the crystalline phase has a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6.

Paragraphs [0041] and [0049]-[0051] of Applicant's specification explain:

> The present inventors discovered that by defining the composition of the material alloy within a particular range and optimizing the melt-quenching conditions, a novel nanocomposite magnet structure, which had been known to nobody in the art, could be obtained, thus acquiring the basic idea of the present invention.
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> …
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> … By adjusting the quenching rate within such a narrow range during the rapid cooling process, the fine structure of the rapidly solidified alloy can be optimized.
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> In a preferred embodiment, the quenching rate is adjusted to 4.0×10^5 K/s or more when the surface temperature of the alloy decreases from 1,300 °C to 900 °C during the rapid cooling process. Then, the fine structure of the rapidly solidified alloy can be further stabilized and improved.
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> By performing the rapid cooling process under these conditions, not only the $R_2Fe_{14}B$-type compound phase (hard magnetic phase) but also a totally new, unknown nanocomposite magnet structure, which will eventually include an α-Fe phase and a crystalline phase with a Curie temperature of 610 °C to 700 °C (or 650 °C or less depending on the alloy composition), are formed in the rapidly solidified alloy during the rapid cooling process. The latter crystalline phase will sometimes be referred to herein as an "ω phase". The present inventors presume this ω phase to be an Fe_2B-type compound phase (as a stable phase).

That is, contrary to the Examiner's allegations, the nanocomposite magnet and alloys of Kanekiyo et al. '235 and Kanekiyo et al. '339 are not made by the same method as the presently claimed nanocomposite magnet and alloys.

Kanekiyo et al. '235 and Kanekiyo et al. '339 teach a broad range of melt-quenching conditions. For example, paragraph [0105] of Kanekiyo et al. '235 and paragraph [0107] of Kanekiyo et al. '339 teach quenching rates of about $10^{2\,\circ}$C/sec to about $10^{5\,\circ}$C /sec. However, Kanekiyo et al. '235 and Kanekiyo et al. '339 fail to provide any specific examples within the narrow range of melt-quenching conditions disclosed in the present application. Further, there is no hint or suggest that Kanekiyo et al. '235 and Kanekiyo et al. '339 were in possession of a nanocomposite magnet or alloy with the feature of "the crystalline phase has a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6, and the Examiner has failed to provide any evidence or reason why one of

ordinary skill in the art at the time of the present invention would have picked the narrow range of melt-quenching conditions disclosed in Applicant's specification that would result in a nanocomposite magnet or alloy with the feature of "the crystalline phase has a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6.

Thus, Kanekiyo et al. '235 and Kanekiyo et al. '339 fail to teach or suggest the feature of "the crystalline phase has a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1 and 6 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over each of Kanekiyo et al. '235 and Kanekiyo et al. '339.

Applicant's Claim 13 recites:

> A decision method for a nanocomposite magnet, the method comprising the steps of:
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> preparing multiple rapidly solidified alloys as materials for a nanocomposite magnet, each said alloy having a composition represented by the formula: $R_xQ_yM_z(Fe_{1-m}T_m)_{bal}$, where R is at least one rare-earth element, Q is at least one element selected from the group consisting of B and C, M is at least one metal element that is selected from the group consisting of Al, Si, Ti, V, Cr, Mn, Cu, Zn, Ga, Zr, Nb, Mo, Ag, Hf, Ta, W, Pt, Au and Pb and that always includes Ti, T is at least one element selected from the group consisting of Co and Ni, and the mole fractions x, y, z and m satisfy the inequalities of
>
> 6 at%≦x＜10 at%,
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> 10 at%≦y≦17 at%,
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> 0.5 at%≦z≦6 at% and
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> 0≦m≦0.5, respectively, and
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> **determining whether or not a rapidly solidified alloy to make a nanocomposite magnet, which has been selected from the multiple rapidly solidified alloys, includes a soft magnetic phase having a Curie temperature of 610 ℃ to 700 ℃**. (emphasis added)

In Section No. 10 on page 6 of the outstanding Office Action, the Examiner alleged that 1) Kanekiyo et al. '235 and Kanekiyo et al. '339 teach alloy compositions that have the same

properties as the alloy compositions of Applicant's claim 13; 2) claim 13 is merely a method for testing whether a product possesses a desired quality; and 3) that performing a quality control procedure (i.e., testing for desired properties) would have been obvious to one having ordinary skill in the art at the time of Applicant's claimed invention. That is, the Examiner alleged that Kanekiyo et al. '235 and Kanekiyo et al. '339 teach alloys that would possess all of the features of the alloys recited in claim 13 and that performing quality control processes on the alloys of Kanekiyo et al. '235 and Kanekiyo et al. '339 would have been obvious to one having ordinary skill in the art at the time of the present invention.

Applicant respectfully disagrees.

As explained above, Kanekiyo et al. '235 and Kanekiyo et al. '339 fail to teach or suggest alloys having the feature of "the crystalline phase has a Curie temperature of 610 °C to 700 °C" as recited in Applicant's claim 1 and as similarly recited in Applicant's claim 6. Further, as explained in paragraph [0051] of Applicant's specification, the "ω phase," which includes "a soft magnetic phase having a Curie temperature of 610 ℃ to 700 ℃," was new and unknown prior to the discovery and development of Applicant's claimed invention.

Because the "ω phase" was not known prior to the discovery and development of Applicant's claimed invention, one of ordinary skill in the art would have not have any reason to test an alloy by performing the method step of "determining whether or not a rapidly solidified alloy to make a nanocomposite magnet, which has been selected from the multiple rapidly solidified alloys, includes a soft magnetic phase having a Curie temperature of 610 ℃ to 700 ℃" as recited in Applicant's claim 13.

Thus, Kanekiyo et al. '235 and Kanekiyo et al. '339 fail to teach or suggest the method step of "determining whether or not a rapidly solidified alloy to make a nanocomposite magnet, which has been selected from the multiple rapidly solidified alloys, includes a soft magnetic phase having a Curie temperature of 610 ℃ to 700 ℃" as recited in Applicant's claim 13.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 13 under 35 U.S.C. § 103(a) as being unpatentable over each of Kanekiyo et al. '235 and Kanekiyo et al. '339.

Accordingly, Applicant respectfully submits that the prior art of record, applied alone or in combination, fails to teach or suggest the unique combination and arrangement of elements and method steps recited in claims 1, 6, and 13 of the present application. Claims 2-5, 7, and 14-16 depend upon claims 1, 6, and 13 and are therefore allowable for at least the reasons that claims 1, 6, and 13 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicant petitions the Commissioner for a ONE-month extension of time, extending to October 8, 2009, the period for response to the Office Action dated June 8, 2009.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Dated: October 8, 2009

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